Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously amended) A microfluidic device, the device comprising:

(i) a body structure with a plurality of microscale channels disposed therein, the plurality of microscale channels comprising:

(a) a mixing channel; and,

(b) a separation channel fluidly coupled to the mixing channel, wherein the mixing channel has a first cross-sectional area and the separation channel has a second cross-sectional area, which first cross-sectional area is larger than the second cross-sectional area;

(ii) a pressure source in fluid communication with the mixing channel, which pressure source introduces one or more samples into the mixing channel by applying pressure to the mixing channel; and,

(iii) an electrokinetic controller in fluid communication with the separation channel, which electrokinetic controller transports the one or more samples into the separation channel by applying a voltage to the separation channel.

2. (previously amended) The microfluidic device of claim 1, wherein the mixing channel has a depth and a width, which depth is between about 5 μm and about 100 μm and which width is between about 5 μm and about 100 μm.

3. (original) The microfluidic device of claim 2, wherein the depth is between about 10 μm and about 50 μm and the width is between about 20 μm and about 50 μm.

4. (original) The microfluidic device of claim 3, wherein the depth is between about 10 μm and about 20 μm and the width is between about 35 μm and about 45 μm.

5. (original) The microfluidic device of claim 4, wherein the depth is about 15 μm and the width is about 40 μm.

6. (previously amended) The microfluidic device of claim 1, wherein the separation channel has a depth and a width, which depth is between about 1 μm and about 20 μm and which width is between about 1 μm and about 20 μm.

7. (original) The microfluidic device of claim 6, wherein the depth is between about 1 μm and about 15 μm and the width is between about 5 μm and about 15 μm.

8. (original) The microfluidic device of claim 7, wherein the depth is between about 3 μm and about 10 μm and the width is between about 5 μm and about 10 μm.

9. (original) The microfluidic device of claim 8, wherein the depth is about 3 μm and the width is about 9 μm.

10. (currently amended) The device of claim 1, wherein the mixing channel has a first depth and the separation channel has a second depth, which first depth is at least about 2 times ~~as as~~ the second depth.

11. (currently amended) The device of claim 1, wherein the mixing channel has a first depth and the sallow separation channel has a second depth, which first depth is at least about 5 times ~~as as~~ the second depth.

12. (currently amended) The device of claim 1, wherein the mixing channel has a first depth and the separation channel has a second depth, which first depth is at least about 10 times ~~as as~~ the second depth.

13. (previously amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 2 times as wide as the second width.

14. (previously amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 4 to about 5 times as wide as the second width.

15. (previously amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 10 times as wide as the second width.

16. (previously amended) The microfluidic device of claim 1, wherein the separation channel comprises a separation matrix.

17. (original) The microfluidic device of claim 16, wherein the separation matrix comprises polyacrylamide, linear polyacrylamide, cross-linked polyacrylamide, non-cross-lined polyacrylamide, polydimethylacrylamide, agarose, cellulose, or polydimethylacrylamide/co-acrylic acid.

18. (previously amended) The microfluidic device of claim 1, further comprising a loading channel fluidly coupled to the mixing channel and intersecting the separation channel.

19. (previously amended) The microfluidic device of claim 18, wherein the loading channel has a depth and a width, which depth is between about 1 μm and about 20 μm and which width is between about 1 μm and about 20 μm.

20. (original) The microfluidic device of claim 19, wherein the depth is between about 1 μm and about 15 μm and the width is between about 5 μm and about 15 μm.

21. (original) The microfluidic device of claim 20, wherein the depth is between about 3 μm and about 10 μm and the width is between about 5 μm and about 10 μm.

22. (original) The microfluidic device of claim 21, wherein the depth is about 3 μm and the width is about 9 μm.

23. (original) The microfluidic device of claim 1, wherein the pressure source applies a positive pressure or a negative pressure.

24. (original) The microfluidic device of claim 1, wherein the pressure source comprises a vacuum.

25. (previously amended) The microfluidic device of claim 1, wherein the pressure source comprises an electroosmotic pump fluidly coupled to the mixing channel.

26. (original) The microfluidic device of claim 25, wherein the electroosmotic pump comprises a channel comprising a fluidic material, which fluidic material comprises a salt.

27. (previously amended) The microfluidic device of claim 25, wherein the electroosmotic pump draws a sample into the mixing channel and the electrokinetic controller injects the sample from the mixing channel into the separation channel.

28. (previously amended) The microfluidic device of claim 1, the device further comprising a loading channel, wherein the electrokinetic controller electrokinetically loads the sample into the loading channel from the mixing channel and electrokinetically injects the sample into the separation channel from the loading channel.

29.-57. (cancelled)